



Calculating the Environmental Deviation from the Mean

How to Get a Random Sample from CensusAtSchool

Go to the CensusAtSchool [Random Sampler](#) to download a sample.X

Reference year: (select year) **Sample size:** At least 50 students

Select questions: Environmental issue rating

Location: Select location **Year level:** (select a range of year levels)

To protect privacy there is a rule built into the sampler that the requested sample size cannot exceed 10% entered.



Please note: This task is designed to be completed using a computer.

Task One: Calculating the Mean Environmental Issue Rating

In the CensusAtSchool questionnaire, students were asked to give a rating for the following six environmental issues:

Environmental issues	Code
Reducing pollution	P
Recycling our rubbish	R
Conserving water	W
Reducing energy usage (electricity, gas, oil, for heating, lighting, car travel)	E
Conserving old growth forests	F
Protecting coastal/marine environment	M

The rating was between 0 and 999 where 0 corresponded to 'Not Important' and 999 indicated 'Very Important'.

1. Place the codes on the number line below to show how you think students in a randomly selected sample would have rated these issues.



500 represents the mid-point of the range 0 to 999. However, 500 might not be the mid-point of the data set if the data is skewed more towards either of the end points.



2. Considering the data that was collected for this question, do you expect the mean value of all the categories to be higher, lower, or the same as 500? Explain your reasoning.

3. Take a random sample of the data and, using Excel, calculate the mean value for each of the environmental opinion issues. Place the values into the table overleaf.

Issue	Reducin g Pollutio n	Recyclin g Rubbish	Conservin g Water	Reducin g Energy Use	Conservin g Old Growth Forests	Protecting Coastal/Mari ne Environment	Over all Mean of all Mean s
Mea n							

4. Next, calculate the overall mean of all the means. What do you think it will tell us about the opinions of the students if:

- a) the overall mean is above 500?
- b) the overall mean is below 500?
- c) the overall mean is exactly 500?

5. Show and label the overall mean as  rum _____ on the number line below, then choose an appropriate scale to enable you to show each of the means for the 6 categories using their codes.

0
999

Task Two: Calculating the Deviation from the Mean

The deviation of each value from the overall mean is the difference each value is from the overall mean. The deviation for each value produces a range that explains which values are close to the mean and which are very different from it.

6. Subtract the overall mean from each of the means to find the deviation of each from the overall mean by i.e. **mean - overall mean = deviation from the mean.**

Issue	Reducin g Pollution	Recyclin g Rubbish	Conservin g Water	Reducin g Energy Use	Conservin g Old Growth Forests	Protecting Coastal/Mari ne Environment	Overa ll Mean of the
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							Mean s
Mean							
Deviation from the mean							

- 7.** Find the sum of the deviations from the mean. What meaning does this have in terms of the fulcrum on the number line?
- 8.** Comment on the values that you found were furthest from the overall mean. Explain why this might be the case.

Note: CaSQ_32B is an extension to this activity